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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/721,824 | 11/26/2003 | Brian M. Cullum | UMBC-0011 | 4783 |

34610 7590 02/12/2007
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| EXAMINER |
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CHENG, JACQUELINE

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| ART UNIT | PAPER NUMBER |
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3768

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE | DELIVERY MODE |
|--|------------|---------------|
| 3 MONTHS | 02/12/2007 | PAPER |

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/721,824

Applicant(s)

CULLUM ET AL.

Examiner

Jacqueline Cheng

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 September 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-18 and 20-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-18 and 20-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement:

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1, 3-18, 20-25 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. **Claims 1, 3, 4, 8-13, 17, 18 and 20-25** are rejected under 35 U.S.C. 103(a) as being unpatentable over Teich (US Patent No. 5,796,477). Teich discloses a multiple photon spectroscopy system in which a source of light in the form of two or multiple photon beams is directed towards a target such as biological tissue or molecules (col. 11 line 49-50). The wavelength of the source of light is capable of being set to a predetermined range of wavelengths, such as in wavelengths lying in a diagnostic window, or in the preferable range of Teich of radiowaves to x-rays (col. 6 line 18-20). The light can also be arranged to irradiate the target at a particular location and size (col. 3 line 50-55) as well as depth by setting the wavelengths to irradiate to the desired depth (such as several millimeters, col. 12 line 32-39). The molecules of the target absorbs a plurality of photons simultaneously. The system may also include an imaging means to produce an image of the 3D structure of the specimen (abstract, col.

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3 line 62-col. 4 line 9). Although Teich does not explicitly disclose that the image be a spectral image from photoacoustic waves, Teich does disclose that any effect induced by multi-photon absorption is contemplated such as photoacoustic absorption (col. 12 line 14-25) and it is also well known in the art to use photoacoustic spectroscopy is used to produce a spectral image such as Muller (US Patent No. 4,529,319) discloses. Muller discloses that it is known to produce, on the basis of photoacoustic spectroscopy, an image display of the absorbing regions of the specimen (col. 1 line 16-23)

4. **Claims 5-7** are rejected under 35 U.S.C. 103(a) as being unpatentable over Teich as applied to claim 1 above, and further in view of Kitamori (US Patent No. 4,808,828). Kitamori discloses that a molecule or atom excited from absorption of light returns to ground state through non-radiative and radiative relaxation processes. The excess energy is released as a photoacoustic signal in the non-radiative relaxation process, and is released as fluorescence in the radiative relaxation process. The photoacoustic effect and the fluorescence generated by a substance are complementary to each other, and therefore it is capable to derive the fluorescent species from the photoacoustic waves in the specimen (col. 1 line 37-col. 2 line 5). It would be obvious to one with ordinary skill in the art at the time of the invention to combine Kitamori with Teich as both inventions are directed to photoacoustic spectroscopy. Teich does not explicitly disclose the specifics of where the photoacoustic waves derive from, Kitamori explains in further details of the deexciting process in the art of photoacoustic spectroscopy.

5. **Claims 14-16** are rejected under 35 U.S.C. 103(a) as being unpatentable over Teich as

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applied to claim 1 above, and further in view of Wang (US Patent No. 6,567,688). Teich discloses using photoacoustic spectroscopy to examine a portion of a specimen, but does not explicitly disclose what type of feature is being examined. This feature could be a malignant tissue, as it is well known in the art to use photoacoustic spectroscopy to examine malignant tissue as can be seen in Wang. Wang discloses photoacoustic imaging in which early stage cancers is being detected (col. 1 line 19-22, col. 5 line 11-13). Wang also discloses that photoacoustic waves can be measured by ultrasonic detectors which means that it is well known in the art of photoacoustic spectroscopy that photoacoustic waves can include ultrasonic waves (col. 1 line 25-27).

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jacqueline Cheng whose telephone number is 571-272-5596.

The examiner can normally be reached on M-F 9:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eleni Mantis-Mercader can be reached on 571-272-4740. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JC


ELENI MANTIS-MERCADER
SUPERVISORY PATENT EXAMINER